

Application Serial No. 10/749,498
Amendment dated May 11, 2005
Reply to office action dated March 16, 2005

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1-11. (Canceled)

12. (Previously presented) The detector of claim 38,
wherein the steel is stainless steel.

13. (Canceled)

14. (Original) The detector of claim 12, wherein the steel
is 304 stainless steel.

15. (Original) The detector of claim 12 wherein:
the metal rod has a length between 0.25 inch and 12
inches; and
the metal rod has a thickness between 1/32 inch and
3/8 inch.

16-19. (Canceled)

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20. (Previously presented) The method of claim 39, wherein the metal rod comprises 304 stainless steel.

21-28. (Canceled)

29. (Previously presented) The detector of claim 41, wherein the elongated piece of metal comprises 304 stainless steel.

30. (Original) The detector of claim 29, wherein:
the elongated piece of metal is connected to an
amplifier; and
the amplifier has an output that may indicate a
concentration of particulate matter in a vicinity
of the elongated piece of metal.

31. (Original) The detector of claim 30, wherein the elongated piece of metal is situated in an exhaust system of an engine.

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32. (Previously presented) The detector of claim 31,
further comprising:

a processor comprising the amplifier; and
a plurality of sensors connected to the engine and the
processor; and
wherein the processor provides control signals to the
engine for affecting an amount of particulate
matter in the exhaust system.

33. (Original) The detector of claim 32, wherein the
control signals may affect fuel injection timing and
percent of exhaust gas recirculation of the engine.

34-37. (Canceled)

38. (Previously presented) A particulate matter detector
comprising:

a spark plug having a center electrode;
a rod attached to the center electrode; and
a passivation layer formed on the metal rod; and
wherein:

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the rod is a metal rod;
the metal rod is a steel rod; and
the passivation layer is oxidized steel.

39. (Previously presented) A method of making a
particulate detector, comprising:

obtaining a spark plug having a center electrode;
attaching a metal rod to the center electrode; and
forming a passivating film on the metal rod; and
wherein:
the metal rod comprises stainless steel; and
the passivating film is oxidized stainless steel.

40. (Previously presented) A method of making a sensor,
comprising:

forming an elongated piece of metal placing the
elongated piece of metal in an insulator;
forming a terminal connected to the elongated piece of
metal;
forming a thin film of insulation on the elongated
piece of metal; and

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wherein:

the elongated piece of metal is stainless steel; and
the film of insulation is formed by oxidizing the
stainless steel.

41. (Previously presented) A detector comprising:
- a metal base;
 - an insulator situated in the metal base;
 - an elongated piece of metal situated in the insulator;
 - and
 - an insulative film formed on the elongated piece of
metal; and
- wherein:
- the elongated piece of metal comprises stainless
steel; and
 - the insulative film is a forming of a passivating film
from the stainless steel.

42 - 43. (Canceled)

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44. (Currently amended) The detector of claim ~~[[43]]~~51,
further comprising:

a processor comprising the amplifier; and
a plurality of sensors connected to an engine and the
processor; and
wherein the processor provides control signals to the
engine for affecting an amount of particulate
matter in an exhaust system.

45. (Previously presented) The detector of claim 44,
wherein the control signals may affect fuel injection
timing and percent of exhaust gas recirculation of the
engine.

46 - 47. (Canceled)

48. (Currently amended) The detector of claim ~~[[47]]~~52,
wherein:

the electrode is connected to an amplifier; and
the amplifier has an output that may indicate a
concentration of particulate matter in the

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vicinity of the electrode due to an input from
the electrode of the charge of the particulate
matter that attaches to the passivating layer.

49. (Previously presented) The detector of claim 48,
further comprising:

a processor comprising the amplifier; and
a plurality of sensors connected to an engine and the
processor; and

wherein the processor provides control signals to the
engine for affecting an amount of particulate
matter in an exhaust system.

50. (Previously presented) The detector of claim 49,
wherein the control signals may affect fuel injection
timing and percent of exhaust gas recirculation of the
engine.

51. (New) A detector comprising:

a base;
a probe situated in the base; and

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a passivating film formed on the probe; and
wherein:

the passivating film is formed from a material of the
probe;

the probe is connected to an amplifier; and

the amplifier has an output that may indicate a
magnitude of charge of a concentration of
particulate matter on the film of the probe.

52. (New) A detector comprising:

a supporting base; and

an electrode having a detecting portion and a non-
detecting portion; and

wherein:

the non-detecting portion is situated in the
supporting base;

a passivating film is formed on all of the detecting
portion of the electrode; and

the electrode is for detecting particulate matter, in
a vicinity of the electrode, which has a charge
and attaches to the passivating film.